

REMARKS

The Office Action mailed on February 28, 2002, has been received and reviewed. Claims 1-101 are currently pending in the application.

Claims 18-101 have been withdrawn from consideration as being drawn to non-elected species. Claims 88-101, which were subject to an election of species requirement, have been withdrawn from consideration.

Claims 1-17 stand rejected.

Reconsideration of the above-referenced application is respectfully requested.

Information Disclosure Statement

Please note that an Information Disclosure Statement was filed in the above-referenced application on April 4, 2000, but that an initialed copy of the accompanying PTO-1449 has not yet been returned to the undersigned attorney. It is respectfully requested that the information cited on the PTO-1449 be considered and made of record herein, and that another, initialed copy of the PTO-1449 evidencing the same be returned to the undersigned attorney. A second copy of the PTO-1449 has been enclosed for the sake of convenience.

In addition, paragraph 6 of the Office Action refers to an Information Disclosure Statement filed on February 5, 2001, and states that it "fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609" because the PTO-1449 form is missing. It is respectfully submitted that no Information Disclosure Statement was filed in the above-referenced application at any time near February 5, 2001. In fact, the only Information Disclosure Statement that has been filed in the above-referenced application was filed on April 4, 2000, when the above-referenced application was originally filed. A PTO-1449 accompanied that Information Disclosure Statement.

Preliminary Amendment

Also, please note that a Preliminary Amendment was mailed to the Office for filing in the above-referenced application on January 31, 2001. The Office has not yet acknowledged entry of the Preliminary Amendment into the file, however. If, for some reason, the Preliminary Amendment has not been entered into the file for the above-referenced application, the undersigned attorney would be happy to have a true copy of the Preliminary Amendment hand-delivered to the Office.

Election of Species Requirement

Claims 1-87 were subjected to an Election of Species Requirement in the Office Action that was mailed on November 10, 2001. The response to that Office Action improperly states that the election of Species I was made with traverse. It is respectfully submitted that this was a typographical error, as it was intended that Species I be elected *without* traverse.

Claim Objection

Claims 1-17 stand objected to because of a perceived informality. In particular, the use of both "the" and "said" in the claims was objected to. Appropriate changes have been made. It is respectfully submitted that these changes do not affect the scope of any of the amended claims, as such changes are merely made for the purpose of consistency.

Accordingly, it is respectfully requested that the claim objection be withdrawn.

Rejections Under 35 U.S.C. § 102(e)

Claims 1, 2, 8, 9, 11, 16, and 17 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,278,153 Kikuchi et al. (hereinafter "Kikuchi").

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention

must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Kikuchi describes a process for forming a thin-film capacitor. Among other things, and with reference to the example provided in FIGs. 6A-6I of Kikuchi, the process of Kikuchi includes providing a fabrication substrate 21, forming electrodes 22 on a surface of the fabrication substrate 22, and applying a layer 23 of dielectric material over the fabrication substrate 21 and the electrodes 22 thereon. As described, the layer 23 of dielectric material is formed by coating a negative type epoxy acrylate resin onto a surface of the fabrication substrate 21 at a thickness of about 10 microns. Col. 18, line 59, to col. 19, line 4. Recesses 23a are formed in layer 23, over electrodes 22 therebeneath to define capacitor containers. As each recess 23a is formed over an electrode, the depth thereof is less than the 10 micron thickness of the layer 23 of dielectric material. After appropriate capacitor electrode and dielectric layers have been formed, a photoresist 20 is applied to the resulting structure. As shown in various Figures of Kikuchi, including FIGs. 6D, 10C, and 13D, the photoresist 20 (photoresist 126 in FIG. 10C and photoresist 155 in FIG. 13D) substantially fills each of the recesses 23a. Although regions of the photoresist 20 that are located over the surface of layer 23 appear in the Figures of Kikuchi to be thinner than the depths of the recesses 23a, Kikuchi quite clearly explains, for example, at col. 20, lines 13-24, that the photoresist is coated onto the structure so as to have a thickness of about 10 microns, which is greater than the depths of the recesses 23a.

Independent claim 1 of the above-referenced application recites a method for disposing a material on a semiconductor device structure. The method of claim 1 includes providing a semiconductor device structure with a surface and at least one recess formed in the surface, as well as disposing material on the surface "so as to substantially fill [the] at least one recess" and such that material covering the surface has "a thickness less than a depth of [the] at least one recess without subsequently removing the material from over [the] surface."

As Kikuchi describes a method that includes application of photoresist 23 so as to substantially fill recesses that are less than 10 microns deep and so as to have a thickness of

about 10 microns over the surface of a fabrication substrate, it is respectfully submitted that Kikuchi neither expressly nor inherently describes "disposing material . . . so as to substantially fill . . . at least one recess . . . " while material covering the surface of the fabrication substrate has "as thickness less than a depth of [the] at least one recess . . .", as recited in claim 1.

It is, therefore, respectfully submitted that Kikuchi does not anticipate each and every element of claim 1. Accordingly, it is respectfully submitted that, under 35 U.S.C. § 102(e), claim 1 is allowable over Kikuchi.

Each of claims 2, 8, 9, 11, 16, and 17 is allowable, among other reasons, as depending either directly or indirectly from claim 1, which is allowable.

Claim 2 is additionally allowable since Kikuchi does not expressly or inherently describe disposing material so as to substantially fill at least one recess of a semiconductor device structure with material without substantially covering a surface of the semiconductor device structure with the material, and doing so "without subsequently removing material from over [the] surface" (claim 1). The description of Kikuchi is limited to forming a layer of photoresist to substantially fill a recess 23a which has a depth of less than 10 microns with a material with the material over surfaces of an intermediate structure in which the recess is formed having a thickness of about 10 microns. The intermediate structure of Kikuchi does not have the elements recited in claim 2 until after material has been removed from the surface thereof.

Claim 17 depends from claim 16 and is also allowable since Kikuchi neither expressly nor inherently describes disposing a stress buffer over a layer of conductive material such that the stress buffer has a substantially planar surface without removing material thereof following disposition thereof.

For these reasons, it is respectfully requested that the 35 U.S.C. § 102(e) rejections of claims 1, 2, 8, 9, 11, 16, and 17 be withdrawn.

Rejections Under 35 U.S.C. § 103(a)

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Kikuchi in View of Yoshihara

Claims 3-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kikuchi in view of U.S. Patent 6,117,486 Yoshihara (hereinafter "Yoshihara").

Claims 3-7 are each allowable, among other reasons, as depending either directly or indirectly from claim 1, which is allowable.

A summary of the teachings of Kikuchi is provided above.

Yoshihara teaches a resist coating method that includes applying resist to a substrate as the substrate is being rotated, decreasing the rate of rotation of the substrate for a predetermined period of time, and re-increasing the rate at which the substrate is rotated.

Yoshihara does not, however, teach or suggest that re-increasing of the rate of spinning of the substrate is effected gradually, as recited in claim 3. Rather, Yoshihara merely teaches and suggests that the rate of spinning is re-increased. As is known in the art, spinning of a substrate may be effected very quickly, and need not be effected gradually. Kikuchi likewise lacks any such teaching or suggestion.

Accordingly, it is respectfully submitted that, under 35 U.S.C. § 103(a), claim 3 is allowable over the combination of Kikuchi and Yoshihara.

For these reasons, it is respectfully requested that the 35 U.S.C. § 103(a) rejections of claims 3-7 be withdrawn.

Kikuchi in View of Lin

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kikuchi in view of U.S. Patent 6,046,083 to Lin et al. (hereinafter "Lin").

Claim 10 is allowable, among other reasons, as depending from claim 1, which is allowable.

Kikuchi in View of Park

Claims 12-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kikuchi in view of U.S. Patent 6,326,282 to Park et al. (hereinafter "Park").

Claims 12-15 are each allowable, among other reasons, as depending either directly or indirectly from claim 1, which is allowable.

Kikuchi teaches a method for forming a thin-film capacitor of a wiring board.

Park teaches a method for forming shallow trench isolation structures in semiconductor substrates.

It is respectfully submitted that, without the benefit of hindsight provided by the above-referenced application, one of ordinary skill in the art would not have been motivated to combine the teachings of Kikuchi and Park in the manner that has been asserted. This is because of the diversity between the methods and the resulting structures taught in Kikuchi and Park. In particular, Kikuchi teaches methods for forming thin-film capacitors. The thin-film capacitors of Kikuchi are not part of a semiconductor device structure but, rather, are a part of a wiring board. *See, e.g.*, col. 1, lines 6-8. In contrast, the method taught in Park is drawn to fabrication of shallow trench isolation structures in semiconductor substrates, such as silicon wafers.

In view of the foregoing, it is respectfully submitted that one of ordinary skill in the art would not have been motivated to apply teachings of Kikuchi to the method described in Park. Accordingly, the combination of Kikuchi and Park does not amount to a *prima facie* case of the obviousness of claims 12-15. Therefore, it is respectfully submitted that, under 35 U.S.C. § 103(a), claims 12-15 are allowable over the combination of Kikuchi and Park.

In view of the foregoing, it is respectfully requested that the 35 U.S.C. § 103(a) rejections of claims 12-15 be withdrawn.

CONCLUSION

It is respectfully submitted that claims 1-17 are allowable. An early notice of the allowability of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully Submitted,



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Enclosure: Version with Markings to Show Changes Made

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please amend the claims as follows:

1. (Amended) A method for disposing a material on a semiconductor device structure, comprising:
providing a semiconductor device structure including a surface and at least one recess formed in said surface;
disposing [the] said material on said surface so as to substantially fill said at least one recess, [the] said material covering said surface having a thickness less than a depth of said at least one recess without subsequently removing [the] said material from over said surface.
2. (Amended) The method of claim 1, wherein said disposing comprises disposing [the] said material so as to substantially fill [the] said at least one recess without substantially covering said surface.
3. (Amended) The method of claim 1, wherein said disposing comprises:
applying [the] said material to said surface of said semiconductor device structure;
spinning said semiconductor device structure;
decreasing a rate of said spinning while permitting [the] said material to at least partially cure;
and
gradually increasing said rate of said spinning.
4. (Amended) The method of claim 3, further comprising exposing [the] said material to a soft baking temperature following said gradually increasing.
8. (Amended) The method of claim 1, wherein, upon exposing [the] said material disposed over an entirety of said semiconductor device structure to an etchant, [the] said material

covering said surface is substantially removed therefrom, while [the] said material located in said at least one recess substantially fills said at least one recess.

11. (Amended) The method of claim 9, wherein said disposing [the] said material comprises disposing a mask material over said semiconductor device structure.

13. (Twice amended) The method of claim 12, wherein said disposing [the] said material comprises disposing a mask material over said shallow trench isolation structure.

15. (Amended) The method of claim 14, wherein said disposing [the] said material comprises disposing a stress buffer over said insulator layer, said stress buffer having a substantially planar surface without removing material thereof following said disposing.

17. (Amended) The method of claim 16, wherein said disposing [the] said material comprises disposing a stress buffer over said layer of conductive material, said stress buffer having a substantially planar surface without removing material thereof following said disposing.